

IN THE ABSTRACT

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The invention is a switched beam beamforming method and apparatus for wireless communication receiving stations utilizing an array of antenna elements in which only a single beam is generated at any given instant and the beam is switched at a very high rate, e.g., faster than the data rate of the system. An algorithm for scheduling the beamforming sequence is disclosed that optimizes performance by optimizing the signal/interference-plus-noise ratio for a given set of conditions at any instant in time. In particular, spatial diversity offered by antenna arrays for direct sequence-code division multiple access communication systems is exploited by an intelligent switched beam antenna at radio frequency level. The design is optimized to yield conditional mean estimates of the communication channel during uplink transmission and compute minimum variance estimates of the communication channel by optimally combining the signals of the spatially distributed antennas at chip rate.